

1 IN THE UNITED STATES DISTRICT COURT FOR THE  
 2 NORTHERN DISTRICT OF OKLAHOMA  
 3  
 4

5 W. A. DREW EDMONDSON, in his )  
 6 capacity as ATTORNEY GENERAL )  
 7 OF THE STATE OF OKLAHOMA and )  
 8 OKLAHOMA SECRETARY OF THE )  
 9 ENVIRONMENT C. MILES TOLBERT, )  
 10 in his capacity as the )  
 11 TRUSTEE FOR NATURAL RESOURCES )  
 12 FOR THE STATE OF OKLAHOMA, )

13 Plaintiff, )

14 vs. )

4:05-CV-00329-TCK-SAJ

15 TYSON FOODS, INC., et al, )

16 Defendants. )

17 - - - - -  
 18 VOLUME I OF THE VIDEOTAPED  
 19 DEPOSITION OF BERTON FISHER, PhD, produced as a  
 20 witness on behalf of the Defendants in the above  
 21 styled and numbered cause, taken on the 3rd day of  
 22 September, 2008, in the City of Tulsa, County of  
 23 Tulsa, State of Oklahoma, before me, Lisa A.  
 24 Steinmeyer, a Certified Shorthand Reporter, duly  
 25 certified under and by virtue of the laws of the  
 State of Oklahoma.

**TULSA FREELANCE REPORTERS**  
**918-587-2878**

**A P P E A R A N C E S**

FOR THE PLAINTIFFS: Mr. Richard Garren  
Attorney at Law  
502 West 6th Street  
Tulsa, OK 74119

FOR TYSON FOODS: Mr. Robert George  
Attorney at Law  
2210 West Oaklawn Drive  
Springdale, AR 72762

FOR CARGILL: Ms. Theresa Hill  
Attorney at Law  
100 West 5th Street  
Suite 400  
Tulsa, OK 74103

FOR SIMMONS FOODS: Mr. John Elrod  
Attorney at Law  
211 East Dickson Street  
Fayetteville, AR 72701

FOR PETERSON FARMS: Mr. Scott McDaniel  
Attorney at Law  
320 South Boston  
Suite 700  
Tulsa, OK 74103

FOR GEORGE'S: Mr. Woodson Bassett  
Attorney at Law  
221 North College  
Fayetteville, AR 72701

FOR CAL-MAINE: Mr. Robert Sanders  
Attorney at Law  
2000 AmSouth Plaza  
P. O. Box 23059  
Jackson, MS 39225  
(Via phone)

**TULSA FREELANCE REPORTERS**  
**918-587-2878**

1 FOR WILLOW BROOK: Ms. Jennifer Griffin  
2 Attorney at Law  
3 314 East High Street  
4 Jefferson City, MO 65109  
5 (Via phone)  
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**918-587-2878**

1 (Whereupon, the deposition began at  
2 9:04 a.m.)

3 VIDEOGRAPHER: We are now on the Record for  
4 the deposition of Berton Fisher. Today is September  
5 3rd, 2008. The time is 9:05 a.m. Would counsel 09:04AM  
6 please identify themselves for the Record?

7 MR. GARREN: Richard Garren for the State  
8 of Oklahoma.

9 MR. GEORGE: Robert George for the Tyson  
10 defendants. 09:05AM

11 MR. McDANIEL: Scott McDaniel for Peterson  
12 Farms, Inc.

13 MR. ELROD: John Elrod for Simmons.

14 MR. BASSETT: Woody Bassett for the  
15 George's defendants. 09:05AM

16 MS. HILL: Theresa Hill for Cargill, Inc.,  
17 and Cargill Turkey Production, LLC.

18 VIDEOGRAPHER: And on the phone?

19 MS. GRIFFIN: Jennifer Griffin for Willow  
20 Brook Foods. 09:05AM

21 MR. SANDERS: Bob Sanders for the Cal-Maine  
22 defendants.

23 VIDEOGRAPHER: Thank you. The witness may  
24 be sworn in.

25 BERTON FISHER, PhD

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**918-587-2878**

1 having first been duly sworn to testify the truth,  
2 the whole truth and nothing but the truth, testified  
3 as follows:

4 DIRECT EXAMINATION

5 BY MR. GEORGE:

09:05AM

6 Q Dr. Fisher, could you state your full name for  
7 the Record, please?

8 A John Berton Fisher.

9 MR. GARREN: And, Robert, may I make the  
10 announcement that we had on our pre-going on the  
11 Record conversation?

09:05AM

12 MR. GEORGE: You may.

13 MR. GARREN: Dr. Fisher has indicated, as  
14 we indicated earlier, in reviewing late yesterday  
15 afternoon for this deposition, under Opinion 18, the  
16 table and the figure that appear in there, appear at  
17 least initially to be possibly containing an error.

09:05AM

18 We haven't yet run that to ground. He's not  
19 prepared today to speak to 18. We'll try and get  
20 that found or researched tonight. If we can't, then  
21 we'll bring him back for Opinion 18 at a later time.

09:06AM

22 Secondly, we gave you a temporary copy of a  
23 field workbook that was prepared by Dr. Fisher this  
24 weekend in anticipation of his deposition and his  
25 actually going to the edge of field sites and

09:06AM

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1 data to find those locations where there was a known  
2 specific origin for poultry waste that was disposed,  
3 that is, the poultry waste was tracked from its  
4 point of origin to its point of land disposal, and  
5 then cross correlate that with the edge of field  
6 samples and look at the edge of field samples in  
7 relationship to named streams, for example, or even  
8 unnamed streams, how does that relate to the  
9 drainage pattern within the area, but bottom line is  
10 it's going to be investigator data, edge of field  
11 samples would be the clearest path.

10:59AM

10:59AM

12 Q As you sit here today, Dr. Fisher, you've not  
13 undertaken that analysis, have you, to track runoff  
14 from poultry litter from a particular site to a  
15 stream to the lake; correct?

10:59AM

16 MR. GARREN: Object to form.

17 Q Have you done that?

18 A Well, I certainly have collected the data to  
19 do that.

20 Q Well, my question is whether you have  
21 completed that analysis.

11:00AM

22 A I have not completed that analysis.

23 Q Okay. Has any expert to your knowledge  
24 undertaken that analysis to actually track runoff  
25 from the edge of field location where litter has

11:00AM

1 been applied to a stream or the lake?

2 A In the sense of doing a causation pathway  
3 analysis as Roger Olsen has done, yes. In terms of  
4 looking at a single field all the way to a stream or  
5 lake, no. 11:00AM

6 Q Okay. Now, with respect to edge of field  
7 samples, you'll agree with me that the mere fact  
8 that a constituent has run off of a pasture and been  
9 collected in an edge of field sample does not  
10 guarantee that that constituent reaches a stream, 11:00AM  
11 the Illinois River or Lake Tenkiller; correct?

12 A It says that constituent is on its way in that  
13 direction.

14 Q Do they all get there?

15 A They all get there eventually. 11:01AM

16 Q They all get there? Everything that runs off  
17 the edge of the field eventually makes its way to  
18 Lake Tenkiller; is that your opinion?

19 A I would say that everything that runs off the  
20 edge of a field ultimately gets into drainage 11:01AM  
21 because it --

22 Q My question --

23 A There's some fraction that does.

24 Q Some fraction from every field or some  
25 fraction from all of the fields? 11:01AM

1 the other integrators named as defendants in this  
2 case, would I get the same answer?

3 **A** Yes, you would.

4 MR. GARREN: Object to form.

5 MR. McDANIEL: The objection was over the 11:04AM  
6 answer. Restate your answer, if you would, please.

7 MR. GARREN: It's in the Record.

8 MR. McDANIEL: You spoke over it for  
9 purposes of the video. That's all.

10 MR. GARREN: It's in the Record. 11:04AM

11 MR. McDANIEL: Restate your answer.

12 **A** So can I do -- let's be sure that we're real  
13 clear.

14 **Q** You want me to ask it again?

15 **A** Yes, please. I'm sorry. 11:04AM

16 **Q** If I ask the same question with regard to your  
17 ability to identify poultry farmers who contract  
18 with the other integrators named as defendants in  
19 this case for which you can show that surface  
20 application of poultry litter have traveled through 11:04AM  
21 the soil and contaminated groundwater in the  
22 Illinois River watershed, would your answer be the  
23 same?

24 MR. GARREN: Object to form.

25 **A** My answer would be the same. I can't, as I 11:04AM



1 sit here today, give you a name or a specific  
2 location where that has happened. Clearly, though,  
3 it has happened.

4 Q How would you go about determining the answer  
5 to that question if you can't provide it today; what 11:04AM  
6 information would you consult?

7 MR. GARREN: Object to form.

8 A From a specific location?

9 Q Yes, sir.

10 A Gosh, you could do an experiment. You could 11:05AM  
11 place tracer materials on the ground of some type,  
12 probably a chemical tracer, and trace that chemistry  
13 into drainage and groundwater and surface water in  
14 the lake, which in effect for the whole watershed  
15 has been done because the poultry waste is in fact a 11:05AM  
16 tracer, but with respect to an individual field,  
17 you'd have to do that at every field.

18 Q Have you undertaken any such experiments in  
19 the Illinois River watershed?

20 A No, and, in fact, no one in their right mind 11:05AM  
21 would attempt to undertake that experiment.

22 Q Why not?

23 A That would cost an enormous sum of money.

24 Q With respect to a particular field would cost  
25 an enormous sum of money? 11:05AM

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1       **A**       Well, it would cost a lot of money to do it at  
2       a particular field. You'd also have to have the  
3       full cooperation of the landowner and possibly of  
4       adjacent landowners.

5       **Q**       When you say an enormous sum of money, are you       11:06AM  
6       talking about a number higher than 18 million  
7       dollars?

8       **A**       No, no.

9       **Q**       It would be cheaper than that, wouldn't it?

10      **A**       We would hope so, yeah.       11:06AM

11      **Q**       Okay.

12      **A**       But I think you're probably talking about  
13      something that's on the order of 2 to 4 million.

14      **Q**       Is that an unreasonable expenditure for this  
15      case in your view?       11:06AM

16               MR. GARREN: Object to form.

17      **A**       I don't know. I can't give an opinion as to  
18      that.

19      **Q**       Turn to Page 9 of your report. In the first  
20      full paragraph, the last sentence of that paragraph,       11:07AM  
21      you state that these constituents would not be  
22      present as contaminants in soil, edge of field  
23      runoff, surface water and streams and in Lake  
24      Tenkiller, groundwater stream sediments and lake  
25      sediments, except for the actions and practices of       11:07AM

1 estimate. If I -- obviously if I say a house is  
2 active and it isn't, then that provides a number  
3 that's wrong. In the alternative, if I identify a  
4 house that -- I don't identify a house that's active  
5 and it is, then I'm wrong in the other direction.

01:37PM

6 With respect to being able to test that, we took a  
7 look at the information that was provided, for  
8 example, by Simmons, and it's discussed briefly on  
9 Page 22, that we have, you know, reasonable  
10 agreement within here -- I think for the two we're  
11 able to test, between 2 percent and 11 percent of  
12 the active house count seemed to fit there.

01:38PM

13 Q Why did you only test your house count, your  
14 active house count number against Simmons and  
15 George's?

01:38PM

16 A Because the documents produced by Simmons and  
17 George's allowed me for this particular time period  
18 to identify the number of houses. The documents  
19 produced by the other integrators did not permit an  
20 identification of the number of houses or did not  
21 give an independent estimate produced by the  
22 defendant of the number of houses.

01:38PM

23 Q So you have not seen, Dr. Fisher, house count  
24 figures or information from my client, Tyson Foods,  
25 for the Illinois River watershed?

01:39PM

1       **A**       I don't recall seeing them. Had I seen them,  
2       I would have incorporated them in this report.

3       **Q**       Did you inquire of counsel that you were  
4       working with as to whether that information from the  
5       defendants as to the actual number of active houses                   01:39PM  
6       in the watershed was available for all of the  
7       companies?

8       **A**       I asked for all the information that pertained  
9       to defendants' representation of houses and birds.  
10      There may be documents in the Tyson production that                   01:39PM  
11      speak to house count, but it was impossible to put  
12      -- in my opinion at the time was impossible to be  
13      able to constrain that in terms of timing to the  
14      relevant time period.

15      **Q**       Sticking with the methodology that you used in                   01:39PM  
16      Table No. 6 for your 354,000 ton estimate, what  
17      would happen to your number, if instead of using  
18      1,917 houses, you used 1,750?

19      **A**       Well, not a whole heck of a lot. It would  
20      also depend upon distribution of those houses. If                   01:40PM  
21      you said 1,750 versus 1,900?

22      **Q**       Yes, sir.

23      **A**       250 houses.

24      **Q**       Would the number go up or down?

25      **A**       Well, I don't know. The number, the number,                   01:40PM

1 Agriculture, Food & Forestry records.

2 Q Okay, and based upon your review of that  
3 dataset, what, if any, opinions have you reached  
4 regarding the typical proximity of land application  
5 in reference to where litter is generated?

01:54PM

6 A Well, it's stated in the report, based upon  
7 review of those records, given the constraints on  
8 knowing the -- that you needed to know where the  
9 waste arose with respect to its public land survey  
10 section, where it was disposed knowing the section  
11 of disposal, knowing the date of application and how  
12 much was applied given in tons and not in any other  
13 units, that given those constraints, that  
14 approximately 30 percent of the waste that was  
15 generated is land disposed in the same square mile  
16 in which it was generated. About 60 percent of the  
17 waste was disposed within two miles of where it was  
18 generated, and 80 percent was disposed within five  
19 miles. This is for Oklahoma as a whole.

01:54PM

01:54PM

20 Q Oklahoma as a whole or the Oklahoma portion of  
21 the watershed?

01:55PM

22 A No. There's a second piece of this statement.  
23 That's Oklahoma as a whole. Going in the next  
24 sentence, it says, likewise, considering only waste  
25 generated within the Illinois River watershed. It's

01:55PM

1 similar, but the wastes are generated or are  
2 disposed somewhat more closely to where they're  
3 generated. For sections that could be identified  
4 being clearly totally within the Illinois River  
5 watershed, about 30 percent of the waste generated  
6 was land disposed within the same square mile, so  
7 equivalent to the state as a whole, but only 67 and  
8 a half percent or 7 and a half percent more of the  
9 waste was disposed within two miles of where it was  
10 generated, and 80 percent was generated within 3.6  
11 millions, so a little more contiguous to its  
12 location of origin than the state as a whole.

01:55PM

01:55PM

13 Q So do I understand then that you hold the  
14 opinion that in the Oklahoma portion of the Illinois  
15 River watershed, 20 percent of the poultry litter is  
16 disposed at a location that's more than 3.6 miles  
17 from where it was generated?

01:56PM

18 A Yes.

19 Q Now, the dataset that you're referring to  
20 here, is it electronic data or paper records?

01:56PM

21 A Well, it's both really. The Oklahoma  
22 Department of Agriculture, Food & Forestry maintain  
23 an electronic dataset. They also retain paper  
24 records. In reviewing the electronic dataset, I  
25 think we determined that there seemed to be some

01:56PM

1       **A**       No.

2       **Q**       Okay. So how did you account for the  
3       real-world differences between different feed  
4       ingredients that can affect the composition in your  
5       fingerprint analysis in this case?

03:19PM

6       **A**       Well, in the real world, these materials are  
7       disposed of in field and are mixed in the  
8       environment, and so in the real world some of the  
9       key things to look at in this chain are what are  
10      added to feeds. What are added to feeds are copper  
11      and zinc salts, and those copper and zinc salts seem  
12      to be present at a reasonably consistent ratio of  
13      about one to one by mass copper to zinc. That's  
14      important.

15           Arsenic may not be sourced from Tyson's  
16      current waste, but in the past may have been, and  
17      certainly is sourced from others' waste. So the  
18      presence of somewhat elevated levels of arsenic is  
19      indicative of poultry waste. So my analysis would  
20      be looking at what's in the feed, what's in the  
21      waste, what's in the environment and how do those  
22      ratios compare and where there are differences, are  
23      those differences explainable by chemical process.

03:19PM

24      **Q**       Your fingerprinting opinions and source  
25      identification opinions are directed at poultry

03:20PM

03:20PM

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**918-587-2878**

1 litter as a class; is that fair?

2 A That's correct.

3 MR. GARREN: Object to form.

4 Q You've not attempted to identify a chemical  
5 fingerprint for poultry litter specific to any one 03:20PM  
6 of the individual defendants named in this lawsuit?

7 A That's accurate.

8 Q On Page No. 38, I think you are making a  
9 statement with the comparison of the CDM data to the  
10 Eucha-Spavinaw data in Table 11. Do you see the 03:21PM  
11 paragraph directly above the chart?

12 A Yes.

13 Q And you say that the CDM poultry waste data is  
14 comparable to and statistically not different from  
15 analytical data for moisture, calcium, total 03:21PM  
16 nitrogen, total potassium, total phosphorus and  
17 total water soluble phosphorus for poultry waste  
18 samples obtained in support of nutrient management  
19 plans in the Eucha-Spavinaw watershed. Do you see  
20 that? 03:21PM

21 A Yes.

22 Q Okay. What does that mean?

23 A Well, just what it says. It says that if I  
24 apply a parametric statistical test to test for the  
25 difference between two means or two averages, that I 03:21PM



1 contamination from poultry litter?

2 MR. GARREN: Object to form.

3 A I don't know how many fields. We've collected  
4 them here from 73 locations, and there may be  
5 multiple locations per field.

04:31PM

6 Q And is it your opinion, sir, that all 73 of  
7 the locations that you've collected data on are  
8 contaminated by poultry waste?

9 A I really don't offer an opinion about any  
10 specific location.

04:32PM

11 Q So you can't point the court to any particular  
12 field where poultry waste has been applied that you  
13 would say is contaminated?

14 A Well, no, that's not true. I would say if the  
15 amount of phosphorus that's present in the soil, the  
16 Mehlich III phosphorus, exceeds the agronomic rate,  
17 which sort of depends on what you want to call it,  
18 whether it's 65 pounds per acre or 100 pounds per  
19 acre or 125 pounds per acre, if it exceeds that  
20 amount, it's contaminated with phosphorus, and if  
21 it's receiving that phosphorus from poultry waste,  
22 then it's contaminated by poultry waste  
23 constituents.

04:32PM

04:32PM

24 Q So you define contamination as anything in  
25 excess of the agronomic rate?

04:32PM

1 go to this particular location, it's contaminated,  
2 but I do know from looking at this data that with  
3 very little effort, I could identify a whole series  
4 of fields that are contaminated.

5 Q Why didn't you do that?

04:35PM

6 A Because that wasn't really of great interest  
7 to me. What is of interest to me is the behavior of  
8 the population of soils with respect to their  
9 receipt of poultry waste and how the chemistry of  
10 those soils vary.

04:35PM

11 Q So, Dr. Fisher --

12 A I'm sorry.

13 Q Go ahead.

14 A And is the chemistry of the soils consistent  
15 with taking up copper, phosphorus, zinc, arsenic  
16 from poultry waste.

04:35PM

17 Q Dr. Fisher, as a scientist working on this  
18 case, you were not interested in identifying the  
19 specific fields that were contaminated with  
20 phosphorus from poultry waste?

04:35PM

21 MR. GARREN: Object as to form.

22 A That wasn't really my charge. My charge was  
23 to look at the population behavior of these soils  
24 and examine whether or not the chemistry of those  
25 soils is consistent with the imbibing or taking up

04:35PM

1 constituents from the poultry waste. The  
2 contamination -- if they're taking up constituents  
3 from poultry waste, then they ultimately will become  
4 contaminated. That keeps going on.

5 Q You refer in Opinion No. 22 in this discussion 04:36PM  
6 to Figure 16 and we talked about it a moment ago,  
7 but let's go back to it.

8 A Okay.

9 Q Do you see the R squared values at the top of  
10 Figure 16? 04:36PM

11 A Yes.

12 Q What do those tell us?

13 A Well, what they really tell you is how tight  
14 the ellipse is around the data. If you were -- can  
15 I draw on something? 04:36PM

16 Q Sure, as long as you'll draw on something that  
17 will be an exhibit. You can draw on Figure 16 to  
18 your expert report.

19 A Okay. The R squared value is sometimes called  
20 a correlation coefficient, but what it actually is 04:36PM  
21 is if you have an array of data, whether it's -- you  
22 are kind of looking -- you are really looking at two  
23 measures like this. Is it a tight spread or is it a  
24 big ball? You know, how close is it to a circle,  
25 how close it is to a really tight ellipse from a 04:37PM

1                   IN THE UNITED STATES DISTRICT COURT FOR THE  
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5       W. A. DREW EDMONDSON, in his )  
6       capacity as ATTORNEY GENERAL )  
7       OF THE STATE OF OKLAHOMA and )  
8       OKLAHOMA SECRETARY OF THE )  
9       ENVIRONMENT C. MILES TOLBERT, )  
10      in his capacity as the )  
11      TRUSTEE FOR NATURAL RESOURCES )  
12      FOR THE STATE OF OKLAHOMA, )  
13   )

14                   Plaintiff, )  
15   )

16       vs. )

4:05-CV-00329-TCK-SAJ

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19       Defendants. )  
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21                   VOLUME II OF THE VIDEOTAPED  
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25       September, 2008, in the City of Tulsa, County of  
Tulsa, State of Oklahoma, before me, Lisa A.  
Steinmeyer, a Certified Shorthand Reporter, duly  
certified under and by virtue of the laws of the  
State of Oklahoma.

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A P P E A R A N C E S

1  
2  
3 FOR THE PLAINTIFFS: Mr. Richard Garren  
4 Attorney at Law  
5 502 West 6th Street  
6 Tulsa, OK 74119  
7  
8 FOR TYSON FOODS: Mr. Robert George  
9 Attorney at Law  
10 2210 West Oaklawn Drive  
11 Springdale, AR 72762  
12  
13 FOR CARGILL: Ms. Theresa Hill  
14 Attorney at Law  
15 100 West 5th Street  
16 Suite 400  
17 Tulsa, OK 74103  
18  
19 FOR SIMMONS FOODS: Mr. John Elrod  
20 Attorney at Law  
21 211 East Dickson Street  
22 Fayetteville, AR 72701  
23  
24 FOR PETERSON FARMS: Mr. Scott McDaniel  
25 Attorney at Law  
320 South Boston  
Suite 700  
Tulsa, OK 74103  
  
FOR GEORGE'S: Mr. Woodson Bassett  
Attorney at Law  
221 North College  
Fayetteville, AR 72701  
  
FOR CAL-MAINE: Mr. Robert Sanders  
Attorney at Law  
2000 AmSouth Plaza  
P. O. Box 23059  
Jackson, MS 39225  
(Via phone)

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-and-  
Mr. Robert Redemann  
Attorney at Law  
1437 South Boulder  
Tulsa, OK 74119  
(Via phone)  
  
Ms. Jennifer Griffin  
Attorney at Law  
314 East High Street  
Jefferson City, MO 65109  
(Via phone)

FOR WILLOW BROOK:

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1 (Whereupon, the deposition began at  
2 9:00 a.m.)

3 VIDEOGRAPHER: We are now on the Record for  
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6 Would counsel please identify themselves for the  
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10 MR. GEORGE: Robert George for the Tyson 09:00AM  
11 defendants.

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13 Farms, Inc.

14 MR. ELROD: John Elrod for Simmons.

15 MR. BASSETT: Woody Bassett for the 09:00AM  
16 George's defendants.

17 MS. HILL: Theresa Hill for the Cargill  
18 entities.

19 VIDEOGRAPHER: Thank you.

20 BERTON FISHER, PhD,  
21 having first been duly sworn to testify the truth,  
22 the whole truth and nothing but the truth, testified  
23 as follows:

24 CONTINUED DIRECT EXAMINATION

25 BY MR. GEORGE: 09:00AM

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1 listen to your testimony and not have your expertise  
2 is you're saying cattle neither import or export  
3 phosphorus from this watershed, and when I say  
4 cattle, grazing cattle. Is that what you mean when  
5 you say they're mass balance recyclers?

11:43AM

6 A That's correct.

7 Q All right. Well, we all agree that when  
8 cattle are harvested, they are killed and processed  
9 for meat, there will be phosphorus in the body, in  
10 the bodies of the cattle that are removed from the  
11 watershed; right?

11:43AM

12 A That's correct.

13 Q Okay. So they're not truly neutral on a mass  
14 balance. They do take -- they use phosphorus to  
15 grow in their flesh, and then when they leave the  
16 watershed, they take that phosphorus with them;  
17 true?

11:43AM

18 A That's correct, a minor amount.

19 Q All right. So when you say they're recyclers,  
20 I think I understand your opinion, but you do agree  
21 with me that cattle are an important part of the  
22 phosphorus transport pathway in this watershed?

11:44AM

23 MR. GARREN: Object to form.

24 A I would agree with Dr. Engel's opinion as to  
25 the extent of their import, but they definitely are

11:44AM



1 part of the transport pathway.

2 Q All right. From mass balance -- isn't the key  
3 in this case not what phosphorus may be entering the  
4 watershed but what phosphorus enters the water?

5 A Yes. 11:44AM

6 Q Okay. So do you agree with me then grazing  
7 cattle eat grass; they consume, take into their  
8 bodies the phosphorus that's in the mass of the  
9 grass; do you agree with me so far?

10 A Yes. 11:45AM

11 Q And I think we agreed that's not necessarily a  
12 pollutant?

13 A Not necessarily. The one thought I had on  
14 that, as I'm sitting here, is that with respect to  
15 increased fertility, and you do see this in poultry 11:45AM  
16 litter applied fields, especially those that are  
17 hayed, the biomass of grass that is grown, the  
18 productivity of grass goes up, which is the reason  
19 more cattle can be supported. In that sense,  
20 additional phosphorus is available for ingestion by 11:45AM  
21 cattle.

22 Q All right. Well, I don't want to get  
23 distracted. Are you making some policy statement  
24 that improving stocking rates on pastures is a bad  
25 thing? 11:45AM

1 MR. GARREN: Object.

2 A In the living blade of grass, yes.

3 MR. GARREN: Object to form.

4 Q All right, and so cattle will convert good  
5 phosphorus into phosphorus that can become a 11:48AM  
6 pollutant by virtue of being washed off or off the  
7 field?

8 A If you are saying can -- the processing of  
9 grass by cattle has the potential to accelerate,  
10 somewhat accelerate phosphorus transport from 11:48AM  
11 systems or at least from grass out of systems, out  
12 of fields; is that your question?

13 Q Yeah. Answer that question.

14 A Yes.

15 Q Okay. Now, it's not just a potential. It 11:49AM  
16 actually occurs. You spent a lot of time in the  
17 watershed. You claim to know what is going on.  
18 It's occurring?

19 MR. GARREN: Object.

20 A Sorry. You say cattle are eating grass. 11:49AM  
21 Cattle are defecating. It rains and things on  
22 fields run off.

23 Q Yes.

24 A Yes.

25 Q Okay, and I don't think there's any 11:49AM

1 disagreement that if cattle have access to water,  
2 they will spend as much time as possible in water;  
3 do you agree with that?

4 MR. GARREN: Object to form.

5 A I think it depends on the circumstances of 11:49AM  
6 weather, but they will go to it. If they can get to  
7 water, they'll go to water.

8 Q All right. So cattle can also be a transport  
9 mechanism for taking phosphorus that was in a living  
10 blade of grass and actually putting it in a more 11:49AM  
11 soluble form directly into water?

12 A They can assist that process.

13 Q And that is occurring in the watershed as  
14 well?

15 A The question is, the degree to which it 11:50AM  
16 occurs, and I think Dr. Engels (sic) looked at that.

17 Q Well, if you can avoid qualifying your answer,  
18 is it occurring in the watershed?

19 A Well, I need to give you a complete answer. I  
20 would believe that it is occurring in the watershed. 11:50AM

21 Q All right, but you have not undertaken to  
22 evaluate the extent to which this transport  
23 mechanism, which is the normal life activity of  
24 grazing cattle, is influencing water quality by  
25 virtue of the fact that cattle take good phosphorus 11:50AM

1 that these are written by Soil Conservation Service  
2 employees. Now, if there are state employees --  
3 that's a conclusion of law as to what I think,  
4 whether it's a state sponsored plan or not, but  
5 it's -- the animal waste management plans tend to be 01:22PM  
6 written by extension people.

7 Q All right. I won't debate with you who writes  
8 them. Are you aware of the fact that there are  
9 animal waste management plans that have been written  
10 for landowners in the Illinois River watershed in 01:22PM  
11 Oklahoma that authorize the land application of  
12 poultry litter?

13 MR. GARREN: Object to form.

14 A Okay. I'll recognize -- with respect to your  
15 question, I would agree that there are nutrient 01:23PM  
16 management plans or animal waste management plans  
17 that have been written that pertain to lands within  
18 the Illinois River watershed that specify the  
19 circumstances of disposal of litter on people's  
20 lands. 01:23PM

21 Q Okay, and those plans would dictate the  
22 allowable rate at which poultry litter can be land  
23 applied --

24 MR. GARREN: Object to form.

25 Q -- on specific fields? 01:23PM

1       **A**       Yes.

2       **Q**       And previously my question was sort of framed  
3       within the context of the state of Oklahoma, but  
4       those plans, nutrient management plans, are -- have  
5       also been written and issued to landowners on the  
6       Arkansas side of the basin?

01:23PM

7       **A**       I have seen nutrient management plans on the  
8       Arkansas side of the basin. It's my understanding  
9       that for -- until very recently they were not  
10      required.

01:24PM

11      **Q**       By whom?

12      **A**       Pardon?

13      **Q**       Weren't required by --

14      **A**       Weren't required by the State of Arkansas.

15      **Q**       Do you know the extent to which the poultry  
16      companies or any poultry company has required its  
17      contract growers to pursue and obtain a nutrient  
18      management plan notwithstanding state requirements?

01:24PM

19      **A**       I know that there are some instances in which  
20      contract growers have had that requirement.

01:24PM

21      **Q**       Is that the extent of your knowledge, what you  
22      just stated?

23      **A**       The extent of my knowledge as I sit here  
24      today. I've read a ton of records. I think there  
25      are requirements by some contract growers that --

01:24PM

1 for nutrient management plans for the growers.

2 Q Okay.

3 A I don't recall when that was first  
4 implemented.

5 Q All right. The -- now, back to where I 01:25PM  
6 started a few moments ago, would you agree that one  
7 reason poultry litter is land applied near where  
8 it's generated in the Illinois River watershed is  
9 because there are landowners that have animal waste  
10 management plans that allow poultry litter to be 01:25PM  
11 land applied in those areas?

12 A Well, I'm not sure that it requires an animal  
13 waste management plan, but there are individuals who  
14 would desire to have it applied.

15 Q All right. Let me -- then tell me, do you 01:25PM  
16 know whether all land application of poultry litter  
17 in the Illinois River watershed today requires the  
18 applicator to be licensed?

19 MR. GARREN: Object to form.

20 A Okay. I think we need to break that down into 01:25PM  
21 by state.

22 Q If you want to answer by state, that's fine.

23 A With respect to Oklahoma, commercial  
24 applicators need to be licensed is my understanding,  
25 and if you are applying it to your own land, you 01:26PM

1 have to make an application report. I'm not sure of  
2 the licensure requirements if you are applying waste  
3 to your own land.

4 Q Okay.

5 A In Arkansas, I am not familiar enough with 01:26PM  
6 that state's regulatory structure to have an  
7 opinion, but it's possible.

8 Q Is all the poultry litter that is applied in  
9 this day and time in the Illinois River watershed  
10 subject to rules or regulations in either Oklahoma 01:26PM  
11 or Arkansas depending on where the land is?

12 MR. GARREN: Object to form.

13 A I believe that at the present time that is  
14 true.

15 Q All right. Are you aware of any circumstance, 01:27PM  
16 Dr. Fisher, where poultry litter has been land  
17 applied in the Illinois River watershed in  
18 violations of the provisions of that landowner's  
19 nutrient management plan or animal waste management  
20 plan? 01:27PM

21 MR. GARREN: Object to form.

22 A I know of none, but there's also no way of  
23 truly checking that.

24 Q Now, in your report at Page 13 where you go  
25 into your history discussion of the defendants, you 01:27PM

1 MR. GARREN: Object to form.

2 A I don't know if it's well known to them or  
3 not, but it's certainly been published by the  
4 Oklahoma Water Resources Board, and in Arkansas I  
5 think the publishing entity here is The Nature  
6 Conservancy. It's not an official state entity as  
7 far as I know.

01:57PM

8 Q Do you have any question in your mind, Dr.  
9 Fisher, that the environmental regulatory  
10 authorities in Oklahoma and Arkansas are familiar  
11 with the geology of the Illinois River watershed?

01:57PM

12 A I believe that scientists working in Oklahoma  
13 and Arkansas are very familiar with the vulnerable  
14 Karst geology.

15 Q Okay, and you agree that both states have  
16 passed laws that allow for the land application of  
17 poultry litter even today provided the person  
18 applying the litter follows certain restrictions?

01:57PM

19 A I agree, but that doesn't mean that they  
20 actually considered the vulnerability of the  
21 geology.

01:58PM

22 Q So you don't agree with the statements that  
23 the restrictions written into the laws of the two  
24 states take into consideration everything you've  
25 said about the soils and geology of the Illinois

01:58PM



1 MR. GARREN: Object to form.

2 A I think that calls for a legal conclusion  
3 because I'm not sure what -- and I'm also not sure  
4 what the term waters of the state of Oklahoma mean.

5 Q All right. For the purposes of this question, 03:38PM  
6 assume for me, and I'm not saying this is the waters  
7 of the state of Oklahoma, but for purposes of this  
8 question because it's disputed, for purposes of this  
9 question so you can provide a factual answer, if --

10 assume for me the waters of the state of Oklahoma 03:38PM  
11 include groundwater and any waters flowing in a  
12 definable stream in the state of Oklahoma. If that  
13 is the state, the waters of the state of Oklahoma,  
14 can you connect the pollution, any pollution in any  
15 of those waters to the operations of any contract 03:39PM  
16 poultry grower?

17 MR. GARREN: Object to the form.

18 A Okay. With respect to flowing streams, would  
19 you include ephemeral streams?

20 Q No. 03:39PM

21 A No.

22 Q Figure 22 still, phosphorus versus zinc plot,  
23 this data point that's at the upper right, do you  
24 know which edge of field sample that is?

25 A Not as we sit here today. I've considered 03:39PM

1 I haven't really worried about that because the data  
2 tells us when they do clean out or when waste is  
3 deposited in fields.

4 Q The ODAFF records specifically tell you when  
5 land application took place; correct?

05:19PM

6 A Yes.

7 Q Okay. From those specific dates, did you  
8 determine any dates of significant rainfall after  
9 any litter application dates you found in those  
10 ODAFF records?

05:20PM

11 A I didn't make that determination. This is a  
12 population study looking at the timing of  
13 distribution, the distribution in time of this  
14 material. That sort of analysis could be done but  
15 that's at a level of detail that's beyond this, the  
16 scope of this report. They're put down -- these  
17 materials are put down during the period of the year  
18 when this is the time where there's the most runoff  
19 events.

05:20PM

20 Q And I think you testified earlier, if you get  
21 a lot of rainfall, you'll get runoff. What is a lot  
22 of rainfall?

05:20PM

23 A More than two inches in 24 hours. I think  
24 that's kind of a rule of thumb around here.

25 Q I'm hoping you can help me with your Table 10

05:20PM